Claims

1. A method to determine whether a first substance interacts with a second substance which method comprises

contacting said first substance coupled to a first demitope with said second substance coupled to a second demitope, in the presence of a reporter wherein said first and second demitopes, when assembled, form a paratope which binds said reporter, and wherein said reporter generates an immediate detectable signal when bound to the paratope, and

determining the presence, absence or magnitude of the signal produced;

wherein the presence of the signal indicates said first and second substances interact and the absence of signal indicates the first and second substance do not interact, or

the magnitude of the signal is a measure of the affinity of interaction of said first substance and said second substance.

2. The method of claim 1, wherein said first and second demitopes are variable regions of the heavy and light chain of an immunoglobulin.

3. The method of claim 1, wherein said first and second demitopes are portions of a receptor.

4. The method of claim 1, wherein said immediate detectable signal is fluorescence quenching or fluorescence enhancement.

5. The method of claim 1, wherein said immediate detectable signal is an alteration of NMR spectrum.

6. The method of claim 1, wherein said immediate detectable signal is the effect of a toxin.

7. The method of claim 1, which is conducted intracellularly.

8. The method of claim 1, wherein the immediate detectable signal is observed by wide-field microscopy.

9. The method of claim 1, wherein the first substance is a small molecule and the second substance is a protein.

10. The method of claim 1, wherein the presence or absence of signal is determined.

11. The method of claim 1, wherein the magnitude of the signal is determined.

12. A method to identify a compound which interferes with the interaction of a first substance with a second substance which method comprises

contacting, in the absence of a candidate compound, said first substance coupled to a first demitope with said second substance coupled to a second demitope in the presence of a reporter, wherein said first and second demitopes when assembled, form a paratope which binds said reporter and wherein said reporter generates an immediate detectable signal when bound to the paratope, and wherein said first substance and said second substance interact to generate an immediate detectable signal;

contacting, in the presence of a candidate compound, said first substance coupled to a first demitope with said second substance coupled to a second demitope in the presence of a reporter, wherein said first and second demitopes when assembled, form a paratope which binds said reporter and wherein said reporter generates an immediate detectable signal when bound to the paratope, and wherein said first substance and said second substance interact to generate an immediate detectable signal;

determining the presence, absence or magnitude of the signal produced in each case;

comparing the signal produced in the presence of said candidate compound with the signal produced in the absence of the candidate compound;

wherein a reduction in the magnitude of the signal produced or the abolition of the signal produced in the presence of said compound as compared to the signal in the absence of said compound identifies said compound as interfering with the interaction of said first and second substance.

13. The method of claim 12, wherein said first and second demitopes are variable regions of the heavy and light chain of an immunoglobulin.

14. The method of claim 12, wherein said first and second demitopes are portions of a receptor.

15. The method of claim 12, wherein said immediate detectable signal is fluorescence quenching or fluorescence enhancement.

16. The method of claim 12, wherein said immediate detectable signal is an alteration of NMR spectrum.

17. The method of claim 12, wherein said immediate detectable signal is the effect of a toxin.

18. The method of claim 12, which is conducted intracellularly.

19. The method of claim 12, wherein the immediate detectable signal is observed by wide-field microscopy.

20. The method of claim 12, wherein the first substance is a small molecule and the second substance is a protein.

21. The method of claim 12, wherein the presence or absence of signal is determined.

22. The method of claim 12, wherein the magnitude of the signal is determined.

23. A compound of the formula X—A, wherein X is a substance to be tested for interaction and A is a demitope selected from the group consisting of a variable light chain, a variable heavy chain, and a portion of a receptor.

24. The compound of claim 23, wherein X is a protein.

25. A nucleotide sequence encoding the compound of claim 24.

26. A library of substances to be tested for interaction with other substances which library comprises a multiplicity of the compounds of claim 23.

27. A kit for the determination of interaction of substances, which kit comprises, in separate containers, a first demitope, a second demitope complementary to the first demitope and, optionally, a reporter reagent which binds to the paratope formed by the interaction of the first and second demitope to provide an immediate signal.

28. The kit of claim 27, wherein said kit contains said reporter.

29. The kit of claim 28, which further contains at least one reagent for coupling test substances to the demitopes.